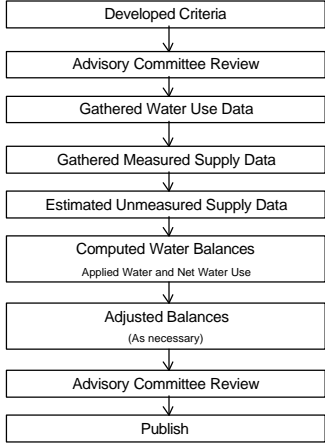
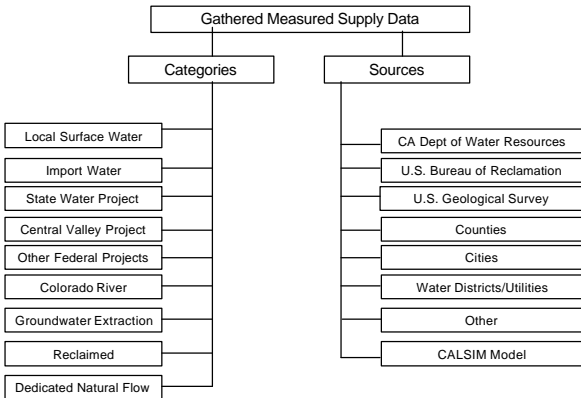
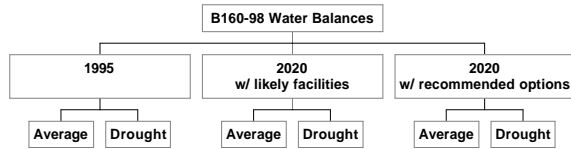


<p style="text-align: center;">Water Supply & Balance Overview</p> <p style="text-align: center;">Methods Used for Bulletin 160-98</p> <p style="text-align: right;">1</p>	<p>Purpose of This Presentation</p> <p>Familiarize the Advisory Committee with the methodology used to evaluate supply and balances in Bulletin 160-98</p> <p>Identify general issues and comments that were raised regarding Bulletin 160-98</p> <p>Identify issues that must be resolved early in the 2003 Water Plan Update Process</p>
<p style="text-align: center;">Purpose of Presentation</p> <p style="text-align: center;">What We Did</p> <p style="text-align: center;">What We Heard</p> <p style="text-align: center;">What We Would Like Early Input On</p> <p style="text-align: right;">2</p>	<p>Presentation Format</p> <p>Part I – “What We Did”: Discuss the methods and assumptions used to quantify supplies and calculate balances by DAU and Hydrologic region</p> <p>Part II – “What We Heard”: General feedback received on Bulletin 160-98</p> <p>Part III – “What we Would Like Early Input On”: Issues that must be addressed in the 2003 Water Plan Update Process</p>
<p style="text-align: center;">Part I</p> <p style="text-align: center;">“What We Did”</p> <p style="text-align: right;">3</p>	<p>This section highlights the general methods and assumptions used in the development of Bulletin 160-98. It is intended to provide base information for Advisory Committee use in the 2003 Water Plan Update Process. It is not intended to be a roadmap of what will or should be done in the 2003 update.</p>

<p>Water Supply & Balance Process for Bulletin 160-98</p>  <pre> graph TD A[Developed Criteria] --> B[Advisory Committee Review] B --> C[Gathered Water Use Data] C --> D[Gathered Measured Supply Data] D --> E[Estimated Unmeasured Supply Data] E --> F["Computed Water Balances (Applied Water and Net Water Use)"] F --> G["Adjusted Balances (As necessary)"] G --> H[Advisory Committee Review] H --> I[Publish] </pre> <p style="text-align: right;">4</p>	<p>This flow chart illustrates the process that was used to develop draft budget criteria through the publishing of Bulletin 160-98.</p>
<p>Key Elements of the Water Balance Developed for Bulletin 160-98</p> <ul style="list-style-type: none"> • Base Year (1995) • Planning Horizon (2020) • Average Year • Drought Year • Normalized Demand • Applied Water Use • Net Water Use • Depletion <p style="text-align: right;">5</p>	
 <pre> graph TD GMSD[Gathered Measured Supply Data] --> C[Categories] GMSD --> S[Sources] C --> C1[Local Surface Water] C --> C2[Import Water] C --> C3[State Water Project] C --> C4[Central Valley Project] C --> C5[Other Federal Projects] C --> C6[Colorado River] C --> C7[Groundwater Extraction] C --> C8[Reclaimed] C --> C9[Dedicated Natural Flow] S --> S1[CA Dept of Water Resources] S --> S2[U.S. Bureau of Reclamation] S --> S3[U.S. Geological Survey] S --> S4[Counties] S --> S5[Cities] S --> S6[Water Districts/Utilities] S --> S7[Other] S --> S8[CALSIM Model] </pre> <p style="text-align: right;">6</p>	<p>This slide shows the categories of supply as well as the sources of that were available.</p> <p>Note that the Dedicated Instream Flow category accounted for:</p> <ol style="list-style-type: none"> (1) Instream flow, (2) Wild & Scenic flows and (3) Bay-Delta Outflow

B160-98 Water Budgets



7

There were 6 applied water budgets presented in Bulletin 160-98. Net water budgets were compiled but not published.

B160-98 Applied Water Budget

1995 Average Scenario

Water use	
Urban	8.8
Agricultural	33.8
Environmental	36.9
Total	79.5
Supplies	
Surface Water	65.1
Groundwater	12.5
Recycled and Desalted	0.3
Total	77.9
Shortage	1.6

8

B160-98 1995 Average Water Use (MAF)

	<u>Applied</u>	<u>Net</u>	<u>Depletion</u>
Urban	8.8	7.7	6.5
Ag	33.8	27.0	24.4
Environmental	<u>36.9</u>	<u>26.7</u>	<u>25.9</u>
	79.5	61.4	56.8

9

The data collected from the urban, agricultural and environmental surveys for the 1995 average scenario are summarized here. Total applied water use was 79.5 maf; net water use 61.4 maf and depletions were 56.8 maf.

See the Environmental, Agricultural and Urban Water Use Overview Papers for more details on this subject matter.

B160-98 1995 Average Water Use (%)

	<u>Applied</u>	<u>Net</u>	<u>Depletion</u>
Urban	11	13	11
Ag	43	44	43
Environmental	<u>46</u>	<u>44</u>	<u>46</u>
	100	100	100

This slide shows the 1995 average water use for each sector by percentage. The percentage use by sector is very similar for the applied use, net use and depletion.

10

B160-98 1995 Water Supplies Average Scenario

Local	10,105
Imports by Local	949
Groundwater	6,758
Reuse groundwater	5,735
Reuse surface water	6,441
Recycled and desal	324
Colorado River	5,176
CVP	7,004
Other Federal	910
SWP	3,126
Req'd Env Instream Flow	<u>31,372</u>
	77,900

This slide shows a summary of sources of water for the B160-98 1995 average year scenario.

Average Year hydrologic conditions were defined by the 1980-1989 time period

Drought year hydrologic conditions were defined by the 1990-1991 drought period.

11

<p style="text-align: center;">Part II</p> <p style="text-align: center;">“What We Heard”</p> <p style="text-align: center;">General Issues and Comments Regarding Bulletin 160-98</p> <p style="text-align: right;">12</p>	<p>This section was drawn from comments received during either the 1999 workshops on B160-98 or the 2003 Water Plan Update scoping workshops held in early 2000. (The complete list was presented to you in your January 18, 2001 meeting materials)</p> <p>The section is meant to capture the range of perspectives that were offered by the public during those sessions. Many of these comments present significant matters for the Department and the Advisory Committee to discuss. The comments, however, come from vastly different, and occasionally even mutually-exclusive, perspectives, on how the 2003 Update could be or should be changed from the 1998 version.</p> <p>Inclusion of the comments should not be seen as an endorsement by the Department of the comment or agreement with its underlying premise, other than as a starting point for potential dialogue.</p>
<p>Determining average and drought scenario hydrologic conditions for normalized demands</p> <p style="text-align: right;">13</p>	<ul style="list-style-type: none"> • Include a worst case scenario under present trends when projecting water supplies and demands. Re-examine the designation of drought year by looking farther into past and considering more extreme conditions, perhaps based on tree ring analysis. • Use existing laws, regulations, and project operations to establish an accurate, well-documented baseline for water supply and for required environmental projection and restoration needs. • Present the accounting for multiple uses of water. • Consider new allocation of Colorado River (4.4 MAF) in future water budget. • Develop methodologies to differentiate between consumptive and non-consumptive environmental water uses. Existing methods appear to only address consumptive environmental uses, but reuse of environmental water within watersheds is a large component that should be differentiated. • Change the methodology for estimating water balances to enable annual updates to keep up with rapidly changing conditions in the State.

<p>Selection of base year and planning horizon</p> <ul style="list-style-type: none"> – Address what the water needs of California will be in 2020 and 2030. – Consider a longer planning horizon. <p>14</p>	
<p>Groundwater overdraft as a shortage</p> <ul style="list-style-type: none"> – Bulletin 160 should not exclude groundwater overdraft from available water supplies. Doing so creates a paper water demand, leading to inflated "shortages." Address concerns that groundwater supply should be managed and protected from overuse. – Redefine term "shortage" as currently used in bulletin – Stop making supply/demand equilibrium within hydrologic regions the primary objective. <p>15</p>	
<p>Double counting of water supplies</p> <ul style="list-style-type: none"> – Environmental Water Use: It has been suggested that DWR develop methodologies to differentiate between consumptive and non-consumptive environmental water uses. Reuse within the water systems is a large component, while existing methods were developed to address consumptive uses. – Conjunctive use transfers across/between Hydrologic study areas <p>16</p>	

<p>Applied water budget versus net water budget</p> <ul style="list-style-type: none"> – Include "net" and "applied" figures as in past bulletin. – Improve definitions and explanations of terms "net water use", "applied water use", and "non-consumptive environmental water use." <p>17</p>	<p>The quantification of environmental water use became more problematic when the computation method was switched from net-water budget in Bulletin 160-93 to applied water budget in Bulletin 160-98. The complication was due to accounting for re-application of applied water downstream using the current spreadsheet tool. The spreadsheet techniques do not have routing capabilities and only perform mass-balance of water uses and supplies within small study areas. It was suggested that the Department apply routing models to properly handle the large volumes of water that have multiple uses including re-application downstream. It was also suggested that the department differentiate between consumptive environmental and non-consumptive environmental water uses.</p>
<p>Part III</p> <p>"What We Would Like Early Input On"</p> <p>Policy, Process and Resource Issues</p> <p>18</p>	<p>This section lists issues that the Department believes need to be addressed relatively early in the update process, particularly in light of the Department's statutory requirement to release, by January 1, 2002, a preliminary draft of the "assumptions and other estimates upon which the [2003 Update] will be based." (See Water Code Section 10004.6, distributed in your 1.18.01 meeting binder).</p> <p>At the March 8, 2001, Advisory Committee meeting, Advisory Committee members will have the opportunity to discuss this list and make their own suggestions for additions or modifications.</p>
<p>Determine average and drought scenario hydrologic conditions for normalized demands</p> <p>19</p>	

<p>Select base year and planning horizon (See Framework Assumptions Overview for More Details)</p> <ul style="list-style-type: none"> – Initial Year? – Study Intervals (2010, 2020, 2030? Or just 2030?) <p>20</p>	
<p>Overdraft as a shortage?</p> <ul style="list-style-type: none"> – Should groundwater overdraft be considered as water supply shortages? <p>21</p>	
<p>Applied Water Budget versus Net Water Budget</p> <p>22</p>	<ul style="list-style-type: none"> • Should we perform both sets of balance methods (I.e., net water use, applied water use) in this Bulletin? • Should we include depletions? • Which method (Applied or Net Water Use) would work better relative to Environmental Water Use calculations? Agricultural Water Use? Urban Water Use?

<p>Double counting water supplies</p> <p>23</p>	<p>For Example: It has been suggested that DWR develop methodologies to differentiate between consumptive and non-consumptive environmental water uses.</p> <p>Should environmental water reuse be accounted for as it moves downstream to avoid double counting?</p>
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